CHEG 4995 - 005: Biokinetics of Fermentation - Spring 2012

Syllabus

***Location***:

Lecture: EII Room 324 – Conference Room

Lab: EII Room 114A (Located in Senior Lab Facilities)

***Recommended Textbooks***:

Brewing Science and Practice – Briggs, Dennis E. - ([www.knovel.com](http://www.knovel.com))

**Handbook to Brewing - Fergus G. Priest; Graham G. Stewart**

How to Brew – Palmer, J. John

***Course Website*:**

<http://uconnbioferment.wikispaces.com/>

***Course Objectives:***

Students will be exposed to basic and advanced topics in brewing science and upon completion of this course will be expected to:

1. Demonstrate an understanding of the mechanics behind each operation in the brewing process.
2. Perform laboratory experiments and apply knowledge based on lectures.
3. Learn how to appropriately scale up laboratory experiments to commercial sized operations.
4. Formulate and adapt recipes according to different regional brewing conditions.

***Grading Rubric:***

Final Course Grade Composed of:

Homework/Classwork: 30 %

Project 20%

Lab-work: 30 %

Participation (20%)

Written Report (80%)

Final Exam: 20 %

*Homework Assignments Policy:*

Homework will be assigned and due the following week unless noted. Individual work must be handed in, working together is encouraged but academic dishonesty is highly discouraged. Work may consist of paper reviews, homework sets, or reading.

*Project*

Groups of two will each be assigned a topic which they must do a 3-5 page paper and 10-15 minute presentation on. Questions, peer, and instructor review will ensue. The topics will be assigned two weeks before the presentation.

*Lab-work:*

This portion of the class will provide hands on application of the topics covered during lecture. A set of controlled experiments will be described and assigned to students/groups of students to complete and report on. Lab grading will be broken up into the following categories:

*Participation (20%)*

Show up, perform experiment, follow safety guidelines and upon completion of experiment follow lab closure procedures.

*Written Report (80%)*

Procedure – Detailed but concise explanation of the experimental

Data Recording – All raw data from day of experiment

Predictions – Expected results, explain the basis for predictions

Analysis/Results – Upon receiving HPLC results, conclude analysis and describe results

*Final Exam*

Cumulative test encompassing laboratory, lecture, and homework sets. The decision to allow or disallow open notes/text will be made closer towards the final exam.

Tentative Schedule:

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| **Week of:** | **Topic:** | **Additional Notes:** |
| January 18th | Review: Syllabus/Brewing Overview/Lab  Brewing as system of unit separations |  |
| January 25th | Barley: From Field to Malt, Adjuncts, Other Materials |  |
| February 1st | Calculating the Malt-bill, Specific Gravity, Extract |  |
| February 8th | Water Chemistry/ Water Consumption |  |
| February 15th | Mashing: Enzymatic Activity (Temperature/pH/Enzymes) |  |
| February 22nd | Hops: Bittering, Flavoring, Aroma/Varieties of Hops |  |
| February 29th | IBU: Calculating and Measuring/Beer Color (Lovibond, SRM). Assign Projects |  |
| March 7th | Yeast: Metabolism and Fermentation |  |
| March 14th | Projects Presentations |  |
| March 21st | Spring Break! |  |
| March 28th | Filtration/Carbonation/Packaging |  |
| April 4th | Alternative Fermentations |  |
| April 11th | Special Topics |  |
| April 18th | Special Topics |  |
| April 25th | Special Topics |  |
| May 2nd | Final Exam Period |  |
| May 9th | Final Exam Period |  |